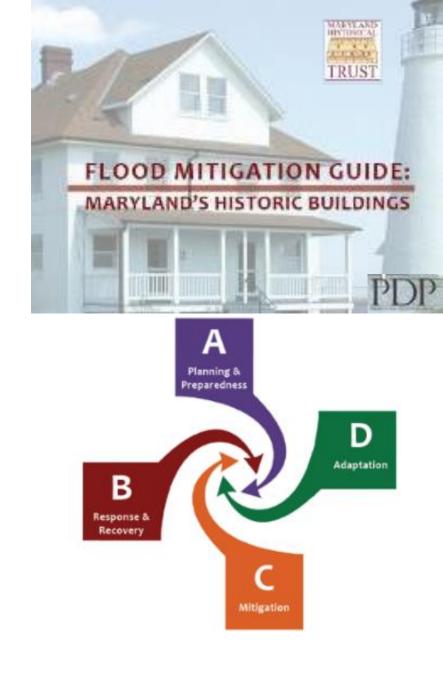


MHT's Flood Mitigation Guide

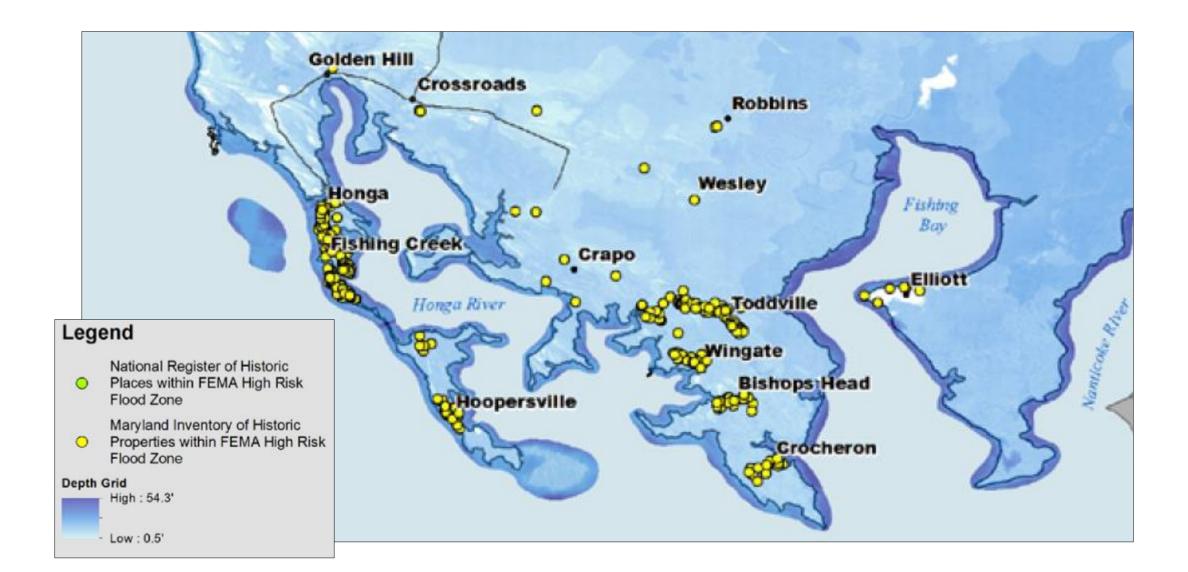
- Purpose A "road map" to aid local governments and preservation advocates protect historic properties in their community from flood hazards
- Audience Anyone in state or local government attempting to meet combined goals of historic preservation and emergency management
- Organization Follows the emergency management cycle and also addresses "Adaptation"



Hazard Mitigation Planning Process



Risk Assessment



Preparing for the Risk Assessment



- Identify known historic resources
- Identify flood hazards
- Analyze your community's capabilities





Engage the Public (2A4)



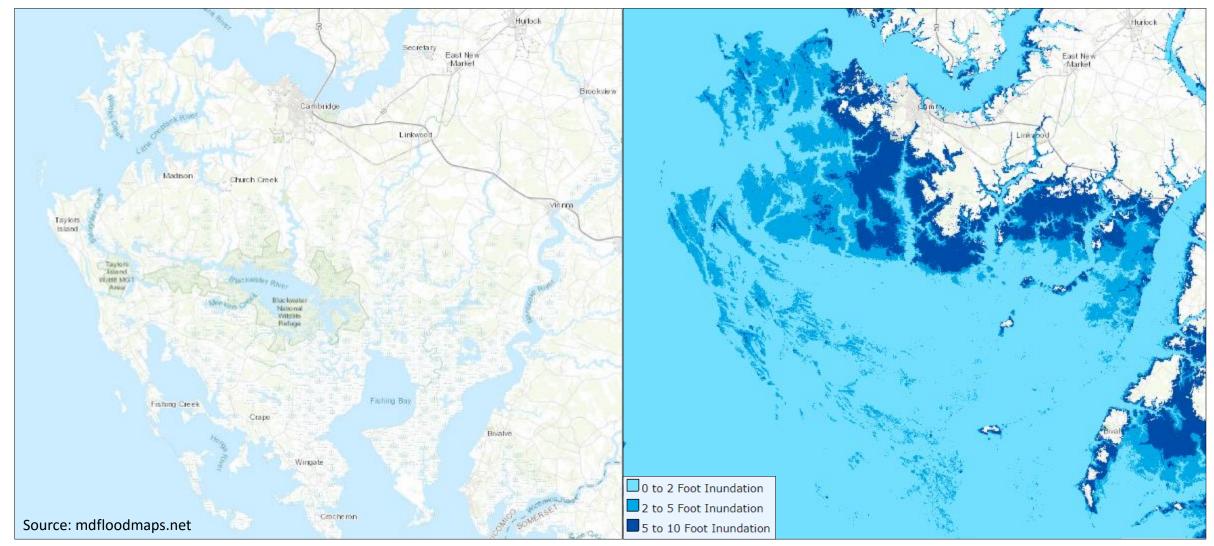


Above: Photo by Alicia Moran, 2016



Establish a Timeframe for Planning Goals





Document & Assess Risks to Historic Properties = Conduct Risk Assessment

Flooding

- Riverine
- Coastal*
- Flash
- Nuisance

*Coastal Hazards

- Coastal Storm
- Storm Surge
- Hurricane
- Tropical Storm
- Nor'easter
- Shoreline Erosion
- Sea Level Rise

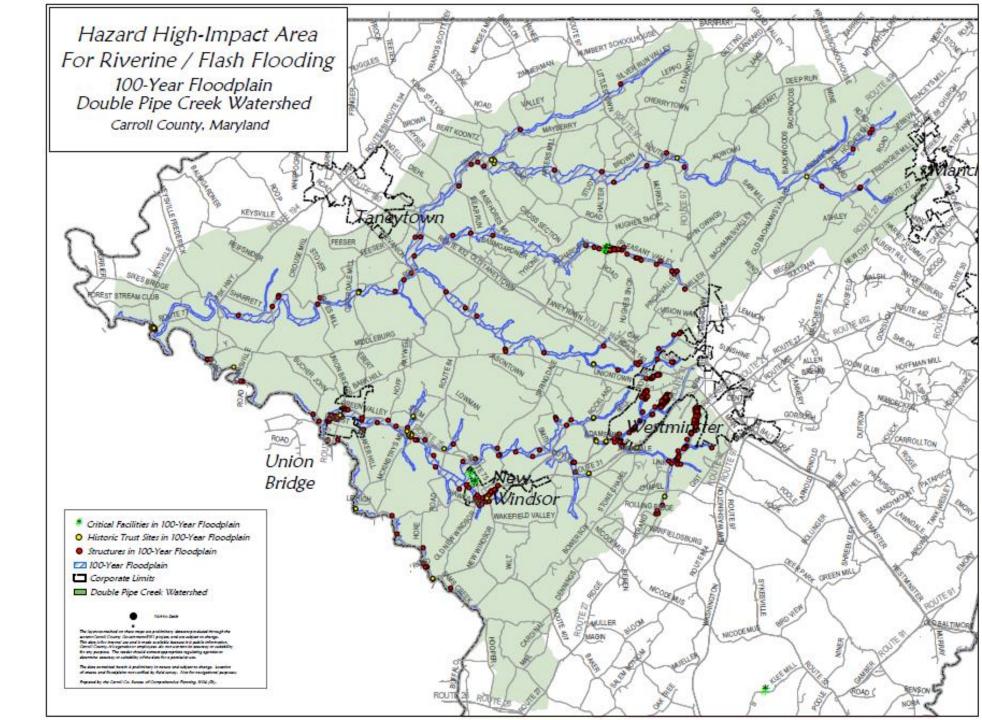
Identify Gaps in Documented Historic Resources

Knowing where existing historic resources are located in relation to the occurrence of natural hazards is not the only information you need to know.

Conducting a Gap Analysis

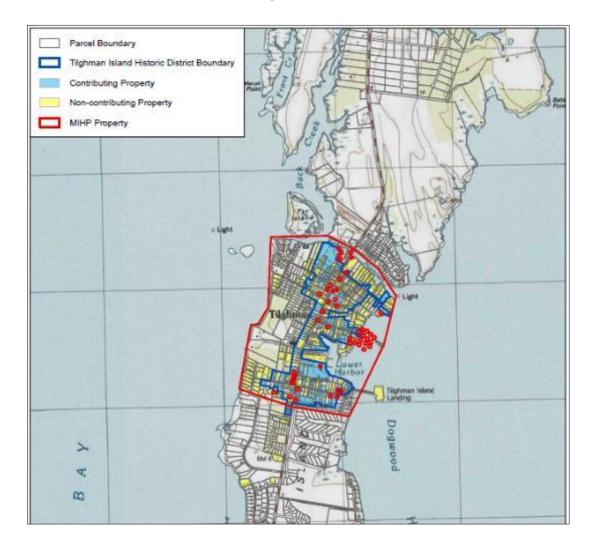
- 1. When was the last architectural survey conducted in the hazard area?
 - Historic resources may have been restored, altered, or demolished
- 2. What historic resources in the hazard area have not had architectural survey? Examples may include, but are not limited to:
 - Mid-century modern properties (1950s-60s)
 - Vernacular, ordinary, or traditional buildings
 - Underserved/underrepresented communities
 - Rural communities

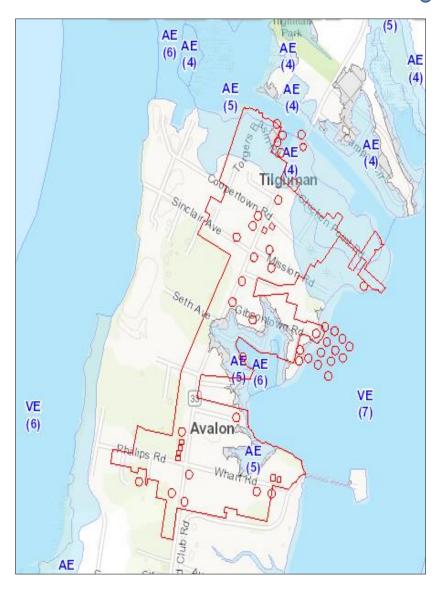
Map It



Document and Assess the Vulnerability of

Historic Properties





Assessing the Vulnerability of Historic Properties

	A	RCHITECT	ND HISTOR URAL SUR MITIGATIO	VEY FO	RM FO	R		
Name of Property:						Date of Visit		
Property Address:	Street and Numbe	r						
	City/Town					County		
Owner(s):								
Owner Address: Street and Number								
	City/Town							
	State/ZIP							
Owner Type:	Public Priv	rate 🔲 B	oth					
Telephone:	Em	nil:						
Inspector's Name(s)):					Telephone:		
Inspector's Affiliati	On:					Email:		
A STRUCTU	RE TYPE, USE, AN	m ppeudot	te er ipvev	,				
Category (e.g. bldg.		AD I KE VIOL		urent for	netion:			
MIHP Number			Listed in Na			□ No □	Ves	
In Listed National F	Agrictar Uistorio Dis	trict?	No Ye	Contri	ibertina D			☐ Yes
Local District Name								
Please list the MIHI Number of Standing 1. 2. 3.	G STRUCTURES C		, type and co	sin struct 5. 6.		g structures on	i the pro	operty.
B. STANDING Please list the MIHI Number of Standing 1.	G STRUCTURES C P Number (if applica g Structures:		, type and co	ain struct		g structures or	a the pro	operty.
B. STANDING Please list the MIHI Number of Standing 1. 2. 3. 4. C. GEO-LOCA	G STRUCTURES C P Number (if applica g Structures:		, type and co	sin struct 5. 6.		g structures or		operty.
B. STANDING Please list the MIHI Number of Standing 1. 2. 3. 4. C. GEO-LOCA	G STRUCTURES C P Number (if applica g Structures:	able), munber	, type and co	sin struct 5. 6.				operty.
B. STANDING Please list the MIHI Number of Standing 1. 2. 3. 4. C. GEO-LOC. Quad attached: Latitude	G STRUCTURES C P Number (if applicate of structures: ATION No Yes	Quad Name:	(m	5. 6. 7.				operty.
B. STANDING Please list the MIHI Number of Standing 1. 2. 3. 4. C. GEO-LOC Quad attached: Latitude D. LEGAL DE	G STRUCTURES C P Number (if applica g Structures:	Quad Name. Los	(m	5. 6. 7.	ture)	Quad Sca		operty.
B. STANDING Please list the MIHI Number of Standing 1. 2. 3. 4. C. GEO-LOC Quad attached: Latitude D. LEGAL DE Tax Map:	G STRUCTURES C P Number (if applicate of structures: ATION No Yes ESCRIPTION AND	Quad Name: Lot PROPERTY Tax Parcel:	(m)	5. 6. 7. ON	Tax	Quad Sca	de:	operty.
B. STANDING Please list the MIHI Number of Standing 1. 2. 3. 4. C. GEO-LOC Quad attached: Latitude D. LEGAL DE Tax Map: Market Value (Bldg	G STRUCTURES C P Number (if applicate Structures: ATION No Yes ESCRIPTION AND	Quad Name: Lot PROPERTY Tax Parcel: Va	(m)	5. 6. 7. ON	Tax	Quad Sca	de:	operty.
B. STANDING Please list the MIHI Number of Standing 1. 2. 3. 4. C. GEO-LOC Quad attached: Latitude D. LEGAL DE Tax Map:	STRUCTURES C P Number (if applicate structures: ATION No Yes ESCRIPTION AND (i): (i): (i): (i): (i): (ii): (iii): (iii	Quad Name: Lot PROPERTY Tax Parcel: Va	(m)	5. 6. 7. ON	Tax	Quad Sca	de:	operty.



Assess the Vulnerability of Historic Properties: Elevation Certificates



	DEPARTMENT OF HOMELAND SECURITY eral Emergency Management Agency onal Flood Insurance Program				OMB No. 1660-0008 Expiration Date: November 30, 201		
	Impo	VATION CERTII ortant: Follow the instructions on	pages 1–9.				
opy all pages of the		sttachments for (1) community office	dat, (2) insurar				
	SECTION A = PROPERTY INFORMATION 1. Building Owner's Name				ANCE COMPANY USE		
A1. Building Own	ers Name			Policy Numb	er:		
A2. Building Stre Box No.	et Address (including Apt., Uni	it, Suite, and/or Bidg. No.) or P.O	Route and	Company N/	VC Number:		
City		State		ZIP Code			
				-			
A3. Property Des	oription (Lot and Block Number	ers, Tax Parcel Number, Legal De	escription, etc.)			
Ad. Duddon Line	to a Passidential Man Passide	and Address Sections of the					
		ential, Addition, Accessory, etc.)					
A5. Latitude/Long		Long.			227 NAD 1983		
AB. Attach at lea	st 2 photographs of the building	g if the Certificate is being used t	o obtain flood	insurance.			
A7. Building Diag	ram Number						
A8. For a building	g with a crawlepace or enclosu	re(s):					
a) Square fo	otage of crawlspace or enclosi	ure(s)	sq ft				
b) Number of	permanent flood openings in	the crawlapace or enclosure(s) w	ithin 1.0 foot a	bove adjacent grad	ie.		
	area of flood openings in A8.b						
d) Engineere	ed flood openings? Yes	□ No					
A9. For a building	with an attached garage:						
a) Source for		eq ft					
al orinals to	stage of attached garage						
	otage of attached garage		ot above adias	oest crade			
b) Number of	f permanent flood openings in	the attached garage within 1.0 fo	ot above adjac	cent grade			
b) Number ofc) Total net a	_	the attached garage within 1.0 fo	ot above adjac	cent grade			
b) Number ofc) Total net a	f permanent flood openings in A9.b erea of flood openings? Yes	the attached garage within 1.0 fo					
b) Number of c) Total net a d) Engineere	f permanent flood openings in area of flood openings in A9.b of flood openings? Yes	the attached garage within 1.0 fo	(FIRM) INFO		R3 State		
b) Number of c) Total net a d) Engineere	f permanent flood openings in A9.b erea of flood openings? Yes	the attached garage within 1.0 fo	(FIRM) INFO		B3. State		
b) Number of c) Total net a d) Engineere B1. NFIP Commu	f permanent flood openings in A9.b area of flood openings in A9.b d flood openings? Yes SECTION B - FLC unity Name & Community Number	the attached garage within 1.0 for sq in sq in No OOD INSURANCE RATE MAP ber B2. County Name	(FIRM) INFO	RMATION	7		
b) Number of c) Total net a d) Engineere B1. NFIP Commu	f permanent flood openings in area of flood openings in A9.b of flood openings? Yes	the attached garage within 1.0 for sq in sq in No OOD INSURANCE RATE MAP ber B2. County Name ex B7. FIRM Panel B8.	(FIRM) INFO	RMATION B9. Base Flood Bi	7		
b) Number of c) Total net a d) Engineere B1. NFIP Commu	f permanent flood openings in A9.b of flood openings in A9.b of flood openings? Yes SECTION B – FLC unity Name & Community Num B5. Suffix. B6. FIRM Indx	the attached garage within 1.0 fo sq in Sq in No OOD INSURANCE RATE MAP ber B2. County Name ax B7. FIRM Panel B8.	(FIRM) INFO	RMATION B9. Base Flood Bi	evation(s)		
b) Number of c) Total net a d) Engineere B1. NFIP Commu	f permanent flood openings in A9.b of flood openings in A9.b of flood openings? Yes SECTION B – FLC unity Name & Community Num B5. Suffix. B6. FIRM Indx	the attached garage within 1.0 for sq in sq in No OOD INSURANCE RATE MAP ber B2. County Name ex B7. FIRM Panel B8.	(FIRM) INFO	RMATION B9. Base Flood Bi	evation(s)		
b) Number of c) Total net a d) Engineere B1. NFIP Commu 34. Map/Panel Number B10. Indicate the	f permanent flood openings in A9.b area of flood openings in A9.b d flood openings?	the attached garage within 1.0 for sq in sq in sq in No OOD INSURANCE RATE MAP ber B2. County Name ex. B7. FIRM Panel Effective Revised Date B3. Garage State St	(FIRM) INFO	RMATION B9. Base Flood Bi (Zone AO, use	evation(s)		
b) Number of c) Total net a d) Engineere B1. NFIP Commu B4. Map/Panel Number B10. Indicate the	f permanent flood openings in A9.b area of flood openings in A9.b d flood openings? Yes SECTION B - FLO mity Name & Community Numb B5. Suffix B6. FIRM Inde Date source of the Base Flood Ber size FIRM Community	the attached garage within 1.0 for sq in sq in No OOD INSURANCE RATE MAP ber B2. County Name ex B7. FIRM Panel Revised Date Revised Date vation (BFE) data or base flood d Determined Other/Source:	Flood e(s)	B9. Base Flood El (Zone AO, use	evation(s)		
b) Number of c) Total net a d) Engineere B1. NFIP Commu B4. Map/Panel Number B10. Indicate the	f permanent flood openings in A9.b area of flood openings in A9.b d flood openings? Yes SECTION B - FLO mity Name & Community Numb B5. Suffix B6. FIRM Inde Date source of the Base Flood Ber size FIRM Community	the attached garage within 1.0 for sq in sq in sq in No OOD INSURANCE RATE MAP ber B2. County Name ex. B7. FIRM Panel Effective Revised Date B3. Garage State St	Flood e(s)	B9. Base Flood El (Zone AO, use	evation(s)		
b) Number of c) Total net a d) Engineere B1. NFIP Commu 84. MapPanel Number B10. Indicate the FIS Prot B11. Indicate ele	f permanent flood openings in A9.b at flood openings?	the attached garage within 1.0 for sq in sq in No OOD INSURANCE RATE MAP ber B2. County Name ex B7. FIRM Panel Revised Date Revised Date vation (BFE) data or base flood d Determined Other/Source:	(FIRM) INFO	RMATION B9. Base Flood El. (Zone AO, use I tem B9: Other/Source:	evation(s) Base Flood Depth)		
b) Number of c) Total net a d) Engineere B1. NFIP Commu B4. Map/Panel Number B10. Indicate the FIS Prot B11. Indicate ele	f permanent flood openings in A9.b at flood openings?	the attached garage within 1.0 for sq in sq in No DOOD INSURANCE RATE MAP ber B2. County Name Ex. B7. FIRM Panel Effective! Revised Date vation (BFE) data or base food of Determined Characteristics. Characteristics of the County Name of t	(FIRM) INFO	RMATION B9. Base Flood El. (Zone AO, use I tem B9: Other/Source:	evation(s) Base Flood Depth)		

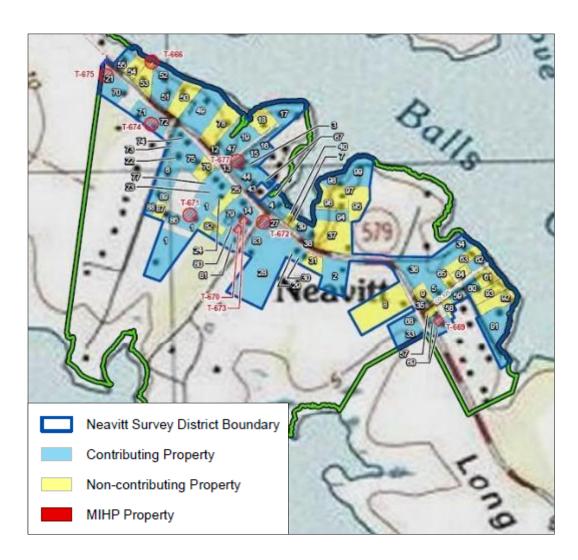
Document Historic Properties – Why Survey?



- Recognize important historic resources
- Evaluate the condition of a property or historic community
- Document key architectural features & historical associations
- Determine eligibility for the National Register of Historic Places
- Establish priorities for restoration/rehabilitation efforts
- Establish priorities to protect against flood hazards
- Serve as an important planning tool

Survey District Approach – Where to Begin?

- How will you and the public define survey area?
- What historic resources will be surveyed?
- What are the expected outcomes?
- Who will conduct the survey and risk assessment?



Survey District Approach — What is the End Result?

- How will results be incorporated into the local hazard mitigation plan?
- What will be communicated to the public, to stakeholders, and to MHT?
- How will hazard mitigation goals and projects for historic resources be incorporated into:
 - O Your comprehensive plan?
 - O Your preservation plan?
 - O Your capital improvements projects?

Analyze Risk



Located in 100-year floodplain

- Base Flood Elevation = 6 feet
- Roughly 300 feet from source of flooding
- Possible low openings in foundation (circled)
- Water potentially also enters buildings via windows and front door (not shown)
- Contents on first floor would be damaged by flooding from a 100-year storm

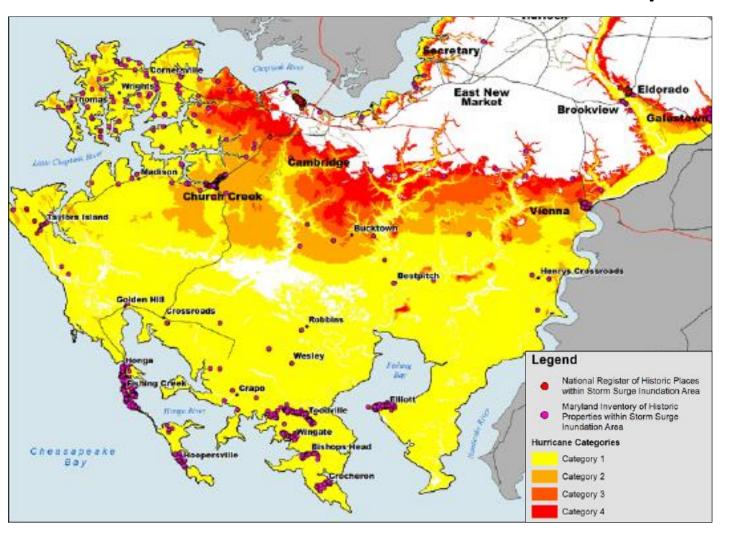
Estimate Economic Losses

Hazus flood loss estimations for historic structures in Dorchester County built in or prior to 1967 are presented on the data table below.

Location	Building Loss	Content Loss	Total
Unincorporated Areas	\$12,386,218	\$8,312,048	\$20,698,266.00
Town of Brookview	\$0	\$0	\$0
City of Cambridge	\$847,637	\$74,053	\$921,690.00
Town of Church Creek	\$54,719	\$19,830	\$74,549.00
Town of East New Market	\$0	\$0	\$0
Town of Eldorado	\$11,074	\$3,942	\$15,016.00
Town of Galestown	\$307	\$992	\$1299.00
Town of Hurlock	\$0	\$0	\$0
Town of Secretary	\$38,310	\$33,061	\$71,371.00
Town of Vienna	\$39,037	\$101,120	\$140,157.00
Total Loss	\$ 13,377,302.00	\$8,545,046.00	\$21,922,348.00

Source: 2016 FEMA Dorchester Flood Risk Product Database & Smith Planning and Design

Summarize Vulnerability



# of Buildings						
High Risk (SFHA)						
383						
18						
0						
Moderate Risk						
143						
Minimal Risk						
1,338						
Total # MIHP building within						
FEMA flood zones: 1,880						

MIHP Buildings in Special Flood Hazard Area (SFHA) High Risk (Zone AE Only)							
AE Flood Zone	Depth of Flooding - MIHP Buildings						
	3 ft. ↑	2.5 ft 2.9 ft.	2.0 ft 2.4 ft.	1.5 ft 1.9 ft.	1.4 ft. ₩		
	121	87	51	48	75		

Summary

After completing the risk assessment you will have:

- Identified known historic resources, flood hazards & your capabilities
- Established a timeframe for planning
- Completed a gap assessment to identify additional areas for survey
- Conducted public engagement to vet the gap assessment, gather additional information on historic resources, and identify additional areas for survey
- Documented and surveyed vulnerable historic resources
- Conducted a risk assessment to quantify the risk to vulnerable historic resource
- Engaged in public outreach to communicate risk and solicit input on preservation priorities

For More Information Contact:

Steve Allan

Local Assistance and Training Planner

Maryland Historical Trust

Steve.Allan@Maryland.gov

410-697-9561

http://mht.maryland.gov/weatherit.shtml



